Mid - Florida Atari Computer Club Bulletin

November, 1994

Vol. 11, No.11

This is the monthly bulletin of the Mid-Florida Atari Computer Club. In it are articles written or submitted by members who feel they are of interest to all users of Atari computers.

You may wish to join a computer club to share the beneficial aspects of having others around you who have similar machines, like interests, and a desire to share what they know with others. A users group can help you understand things about your computer that they have already discovered.

Our membership, at $12.00 per year, entitles you to the newsletter, access to the disk libraries, and club meetings where all the fun and education happen on a monthly basis.

We meet in the Orlando Library building downtown Orlando, 101 E Central Blvd. At 1:30PM on the second Sunday of each month. Feel free to join us there next month to learn more about the wonderful world of computers, and Atari computers in particular.

For Newsletter Exchange

M.F.A.C.C.
C/O Bob Smith
3729 Yosemite Dr.
Orlando, FL 32818

M.F.A.C.C. Affiliated BBS Listing:

Top Gun	☛ 381-5403
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Mid-Florida Atari Computer Club

MID-FLORIDA ATARI COMPUTER CLUB

From The President

Our president has been on a mission ,and in his travels his command/staff car left him at a GREAT disadvantage. Not having a mechanic as his traveling companion, he got dust and a few miles on his Texas boots. And has had no time to complete his message.

Minutes Of The M.F.A.C.C. General Meeting

(Editor's Note: The Club Minutes for September, 1994 were not published in the October, 1994 Newsletter due to the special October, 1994 Issue. It is being published this month and because of the nature and type of October, 1994 meeting there was no official October Meeting notes.)

Minutes for the September Atari Club

The meeting started at 13:40 and OLD BUSINESS was discussed:

1) Checking account: Bill Baker went to Great Western to get a free checking account since Sun Bank is not really a bank anymore (at least for checking). As we pay no interest if we keep more than $700 in the account, and we have $815, we will move to Great Western.

2) Bob handed out bumper stickers to anyone who dared to take them.

3) Barry Broskwitz joined the club again. Years ago, he ran an old BBS in Orlando, but spent several years in Cinninati.

NEW BUSINESS was then discussed:

1) Bob talked about Atari and its problems. This also included people and their lack of support.

The meeting ended at 2:08

Some phone numbers you will need to communicate with our club:

President:
Bob Smith ☛ 299-5374

Vice-President:
John Baker ☛ 823-9705

Treasurer:
Bill Baker ☛ 277-3438

Secretary:
Robert Raymond ☛ 896-7404

Librarians:
8-Bit:
Arthur Averett 290-2096

ST:
Rick Sava ☛ 574-6033

Publicity:

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Treasurer's Report
November, 1994

Opening balance for checking
Deposit
Service charge
Ending Balance

As of October 30, 1994

Birthdays for November

Jon Powell
Robert Raymond
Larry Regan
Charles Smyth, Jr.

What do you want for X-mas?

Ole Saint Nick...

MFACC MEETING - DECEMBER 11, 1994
JAGUAR DEMO OF A HOT NEW GAME
AMAZING SURPRISE DEMO
XMAS GRAB BAG

Hey Bob. This bird is for you!

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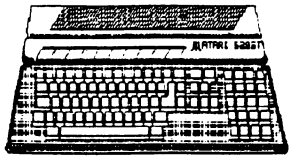


The Falcon has LANDED!!!

Civilization

Or
How to turn one
little covered wagon
into a world of trouble.

by Bill Baker

Whenever I have sought out a good, playable, great graphics, good play game with a lotof thought put into it, I have selected one of Sid Meier's creations. Microprose brought us at Atari a number of his gems, first in the eight bit world, then more recently, for the ST series. My last was Silent Service, with its several levels of strategy and difficulty.

Now, once more, Sid has outdone himself with *"Civilization"*! Starting with but a single player 'tile' which moves about on an ever enlarging map, discovering wealth, or scrolls of wisdom, or friendly tribes to help your kingdom grow, and sometimes a horde of barbarians hell-bent to destroy your player, you try to search the entire "world" of the game, acquiring terriotory, cities, wealth and the wisdom of the ages as you go, striving to be the first man on the moon to win the game.

To be sure, all the possibilities seem to be covered here. Game play can be varied by selecting the level of youer people''s ruler, from chieftan, the simplest, to Emperor, the most complex. The game's AI protocol will throw the problems at you in proportion. You need to select a tribe from the listing, (or type in your own), and selet a name for the Patriarch of your tribe and let it happen.

Copy protection for this game, as in others written by Sid, is pictorial. Without the manual you will never get past your fiftieth turn, and the extensive picture scheme requires a search therough dozens of pages to find just the right one. The manual also provides a "timeline of civillization" to refer to so you don't overlook something critical while you are picking out what to 'invent' next.

Each city you create by rolling a wagon to a likely spot and hitting the B(uild city) manufactures one single thing at a time to aid you in growing into a great kingdom or republic. I suggest you build a militia first, then a settler, and begin to develop the land around your new city. You can I(mprove the land), or M(ine the hills or swamps) and put in a system of roads to build up trade.

As you move on, you need to build your city a granary, a temple, a market, and finally, a barracks. A caravan can be sent out to establish trade routes when you are advanced enough. Keep the tax rate as low as possible and your scientific advances will move along at a GOOD CLIP.

Next time we will talk about the progression through the military playing pieces as your civilization improves. It helps to learn quickly who is more powerful in which battle, and have that more powerful piece at the ready.

(Editor's Note: At long last here is the definitive series about the trials and tribulations of this fine game. Bill Baker, our esteemed treasurer, has started us on a literary journey through *"Civilization"*. The newsletter staff are indebted to Bill for his fine work.)

Key Issues

(November, 1994)

(Or The Real Right Stuff)

by Robert Raymond

Its late evening in 'Tron' world. A ghostly summer breeze wafts through my hair as I walk my computerized flight line. Over there sits a line of just about every fighter flown in World War One. My Battle of Britain heavy iron sits in that collection of hangers over there. And, near the tower, is arrayed my F-15, my F-16, and my Mig-29. From behind the terminal building, the tip of my Airbus-320 is visible. And over on the side tarmac, still loved but flown infrequently, is my dear old Cessna 182.

If I stand on tip-toe and look across the field into the weeds, I can see the rusted line of planes that I haven't flown in years: A set of Lucasfilm Spitfires and ME's, and another Spitfire built in the Avalon Hill Aircraft factory. There's even an old B-17 Flying Fortress over there that I flew once or twice and parked on the back lot. Back in the woods, I can see older (and more frustrating) aircraft.

I've flown just about every simulator for the ST that has ever been made. Many have been good, but an equal number have been poor. Sadly, my little private airpark will probably not see too many new aircraft anytime soon, given the trickle of games now available for the ST. Still, in case this is read by any developers out there, I would like to list the features that I would like to see in my 'dream' air combat game...

1) Make planes 'Fly'. Too often, the plane you control travels along like a boxcar on rails: Fighters tend to be unstable! We should have to make small corrections.

2) BUT give us a break on things that we can't do as well. For example, in one air-sim game, a plane in a dive picks up speed, increasing its lift, and making its nose go up. So you push forward to stay on target, and the speed increases more, and the nose comes up... So much for those famous swooping attacks that are such an important part of dogfighting.

3) Give us a good forward & up view! Most air combat is done on a wingtip. If you roll after an opponent, you can't look up though the canopy at him, and watch for him to break. Left and right views are too restricted, as well, since they then to be straight up and down in a turn: horizon view is better here.

4) Make enemy planes 'stunty', so that they make you work for your kill. Planes that go into lame circles are dull. The enemy planes need at least a dozen manuevers that they can work with to make them feel more realistic!

continued next page ☞

5) Make the simulator true-to-life, in that there should be no 'overviews' (other than maps). Air combat is mostly trying to line up a shot while watching your own tail and keeping tabs of the fight around you; having an overview screen that freezes enemy aircraft and allows you to see everyone's location defeats this. What is more, let them sneak up on you, and you on them - most aircraft shot down never saw their attacker.

6) Give us lots of working cockpit controls. For example, starting an engine should require two or three things being done. You should also need to clear your guns for action. Ditto, we should have to shut down the plane after combat.

7) I just want to be a pilot. Give me missions that need to be done. I don't want to "assign missions to your squadron, deciding on a wide range of missions". Neither am I interested that "the entire outcome of the air-war rests on your shoulders". Hey, I'm a pilot. Wind me up and let me go.

8) Give me good death scenes. When I shoot someone down, make them break up into little pieces, catch fire and burn all the way down, or go out of control. I've only seen one game where they actually had different deaths.

9) Everyone is not the same, and everyone's opinion of what is realistic and/or fun is different. Rather than one difficulty level, allow us to set different difficulty levels for different elements of the game. In Falcon, the Migs were a joke at level two, but much more fun at level three. However, at three, the SAM batteries became invincible. So I could never set the game to the way I wanted to play.

10) Randomize! Too often, I see the same guys doing the same tricks. In the second Falcon game, the Migs always start in the same place. In Knights of the Skies, the Germans always attack from above and behind. Give us the chance to fly around, and spot a plane far below us, or far above us, but not in the same place every time. If I wanted a pattern game, I'd play PacMan.

11) Change the color of the Sky! The sky is not always bright blue. Sometimes it is grey, or dark blue, or hazy white, or even orange and red. Such a minor change would make the game feel new every time it is played!

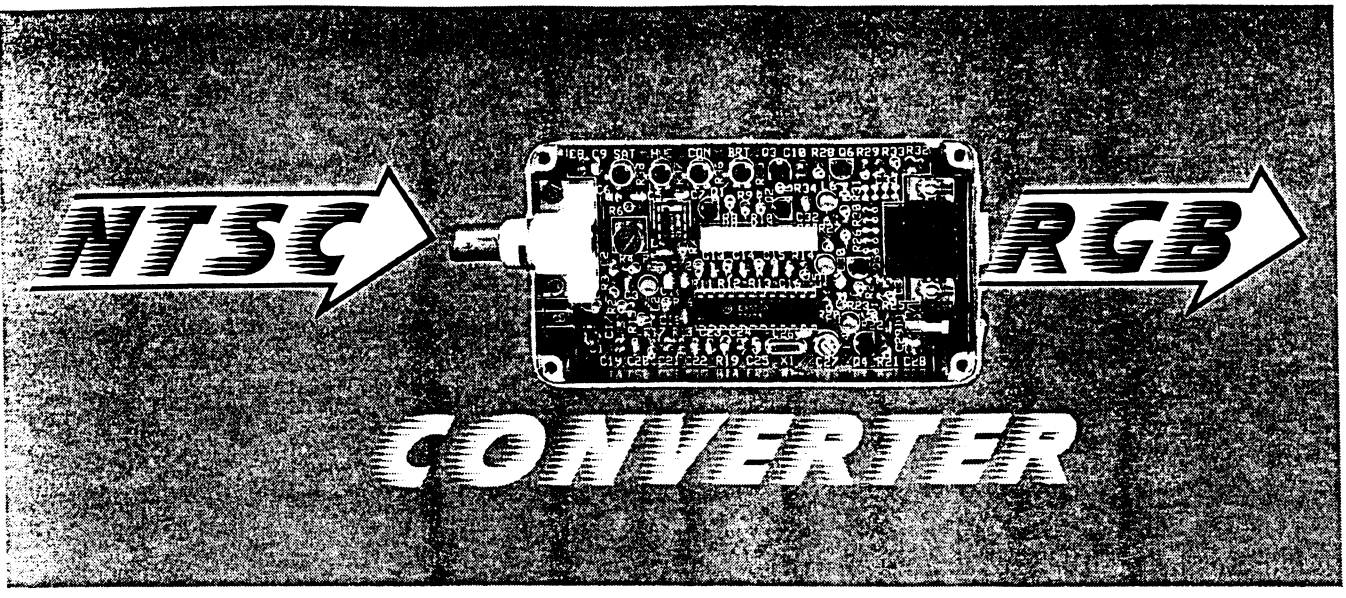
12) Never, never, never give me a damage gauge! Never make enemy planes require 'three gun hits'. You do not shoot at a plane to wound it; you shoot at it to kill it. One shot should have a chance of downing a plane. Or it might soak up all sorts of your hostile attention. As for my damage, give me a chance that the hit will damage or even knock out my engine (fuel tank hits and control damage hits are OK, too). You may even wish to 'wound' me. But never kill me outright. I have one game where you can be sighting up on a baddie, and a bullet from a second plane hits you, decides that it slew you instantly, and *BLINK* , the game ends! Black the screen on and off, and let me fight for control all the way down, but don't just shut down!

13) Give us some feeling of power over ground targets. Airplanes murder ground targets. Making them tiny little things that are hard to hit with machine guns is annoying. When I strafe, I want to leave a trail of death in my wake. In Knights of the Sky, you occasionally see enemy trucks rolling along the roads. In the accounts that I read, pilots almost always forced them to roll over into ditches or go off with delightful bangs. In Knights, it is very much like trying to hit an ant with a tap hammer. I am more likely to crash into the ground than I am to score a truck in that game.

14) Don't attack us at our own airfields. Since 1915, airfields have been very dangerous, especially if they aren't yours! Rings of AA, as well as a constant stream of aircraft from the ground, make loitering about such a place suicidal. But nothing is more frustrating than trying to land after a tough mission with three enemy aircraft lining up on you. Yes, you could get wacked while on final, but in Knights of the Sky, I never ended a mission without diving for the field, hotly pursued by three Fokkers.

This whole article was pretty rough on Flight Sims; Next KeyIssues; The "Wings" Raymond Awards for Good Flight Simulators!

(Editor's Note: This is anothr in the continuing series "Key Issues" by Robert Raymond. Robert, also known as Mr. Cumdgeon, is the current Secretary of the Mid-Florida Atari Computer Club, writer and programmer that our Club is fortunate to have. His opinions are respected, but do not necessarily represent the opinions of the Newsletter staff, Club Officers or the Mid-Florida Atari Computer Club in general. We express our thanks for his valuable contribution.)



Put a TV in your VGA monitor.

JIM HARRIGFELD

AT BOTTOM, A TV AND A COMPUTER monitor are more alike than they are different. As a matter of fact, a monitor is really just a TV in disguise less a few circuit boards and knobs.

At one time, when computers used teletypewriters for display, television pictures were considered high-resolution. Today, even the best TV sets cannot compare with the latest breed of computer monitors in terms of resolution, stability, convergence, and fidelity. So wouldn't it be nice if you could simply connect a VCR or camcorder to your monitor and enjoy some of that extra fidelity?

This article will show you how to build a simple decoder that will take any standard NTSC video signal (from a VCR, camera, tuner, or what have you), and convert it into the analog RGB signals that computer monitors work with. The circuit costs well under $100 to build, and requires no fancy test equipment to align. In addition, if you would like to build one, partial and complete kits are available.

Some basics

A color monitor has a simple interface. It generally requires four separate signals to operate: red, green, blue, and sync. Sync tells the monitor where and when to start each scan line, and the RGB signals determine how much red, green, or blue to display in the picture at any instant in time.

The composite video signal used in a television is more complicated, because it combines all the RGB signals, as well as other timing information, into a single high-frequency signal. In the United States, this signal is based on the NTSC/RS-170A video standard.

The disadvantage of composite video is that a great amount of processing is required to combine and encode the separate signals into one composite signal. The advantage of composite video, of course, is that the signal may be broadcast over the air or sent down a single piece of coaxial cable. But to be displayed, eventually the signal must be broken down into its individual red, green, blue, and sync components. By contrast, the advantage of the RGB system is that no decoding circuitry is required, so circuit designs are simpler and cheaper. The disadvantage of the RGB system is that several wires and multi-pin connectors are required to make connections.

Given the similarity between a television and a monitor, what exactly is required to display NTSC video on an RGB monitor? First and foremost, we need an analog monitor that is capable of scanning at standard NTSC video rates (60 Hz vertical, 15,750 Hz horizontal). That requirement immediately eliminates most fixed-frequency (digital) monitors—i.e., most CGA and EGA types. However, most multifrequency type monitors work beautifully.

We also need a video source. You can choose any VCR, video camera, camcorder, or component tuner that has a video output in the NTSC/RS-170A format. Those devices usually have some kind of audio output that you can use to drive a pair of headphones or your home stereo system.

Of course, there's still one thing missing: a gadget that can be used to convert the composite video from your source device into the separate RGB signals that your monitor understands.

About the circuit

Figure 1 shows a block diagram of the circuit, and Fig. 2 shows the complete schematic. The heart of the circuit is IC2, a TDA3330. That highly integrated Motorola IC is specifically designed to break a composite video signal down into its individual components. The TDA3330 requires three inputs to operate: chroma (color information), luminance (brightness information), and burst flag (timing information).

The other major component is IC1, an LM1881 video-sync separator made by National Semiconductor. It extracts most of the important timing information

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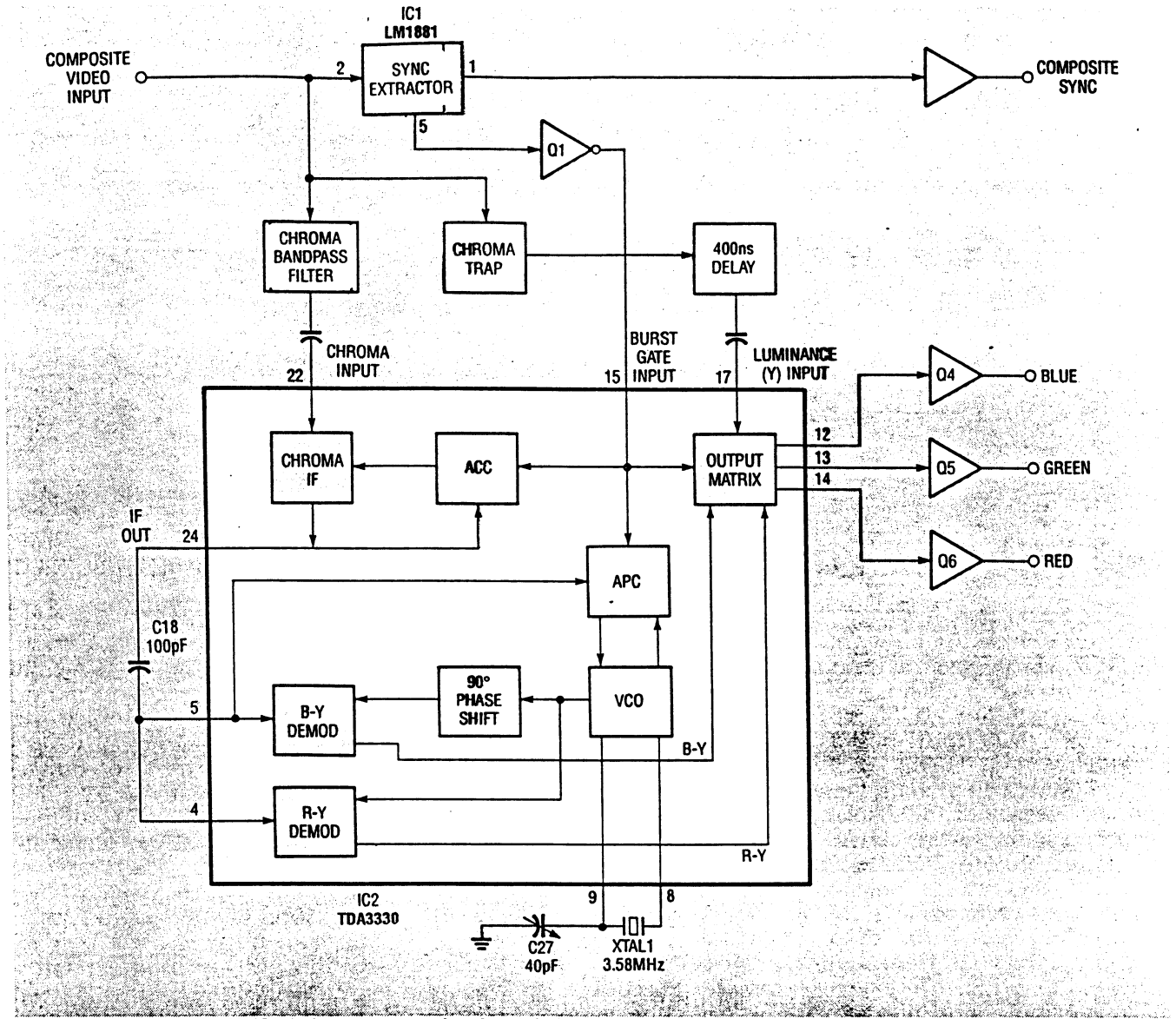

FIG. 1—BLOCK DIAGRAM. IC1 derives the sync signal and timing information. IC2 uses the latter to decode the red, green, and blue outputs.

from a standard video signal, and it needs only three external (passive) components to operate. Our circuit uses two of its three outputs: composite sync, which after buffering becomes one of our outputs; and the burst flag, which is inverted by Q1 to furnish the necessary timing information to IC2.

The other signals that are needed by IC2 are derived from the composite video input signal by means of several passive filters. The chroma bandpass filter consists of R2, L2, C11, and C12. That circuit works by allowing only 3.58-MHz signals to pass into pin 22 of IC2, while blocking all others. The luminance input (pin 17) is just the opposite, in that the 3.58-MHz component must be blocked and all other frequencies allowed to pass through. That is accomplished with the chroma trap consisting of L1, R3, R4, C2, and C3. Basically, the output of the chroma trap is monochrome video. To meet NTSC timing requirements, that signal must also be delayed (by R5, R14, and L3) before entering IC2.

With proper input signals, IC2 requires only a few more passive components to enable it to lock on to the incoming signals. Once locked, the IC performs all I/Q demodulation, quadrature decoding, R−Y, and B−Y processing, and it then delivers red, green, and blue signals at pins 14, 13, and 12, respectively. Those signals are buffered in turn by Q4, Q5, and Q6, which are set up as emitter followers designed to drive 75-ohm loads.

The circuit has four controls for setting operational characteristics. The brightness control (R35) sets the black level of the RGB outputs; for most applications, it should be set at minimum. The three other controls (hue, R37; saturation, R38; and contrast, R36) work much like their counterparts on a standard TV. After they have been properly adjusted, none of those controls should require operator intervention. The brightness control shifts the black level without affecting the overall peak-to-peak amplitude of the signal. On the other hand, the contrast control varies the peak-to-peak amplitude without affecting the black level.

Figure 3 shows several waveforms and timing relationships for a color-bar input signal at several points in the circuit: (a) The

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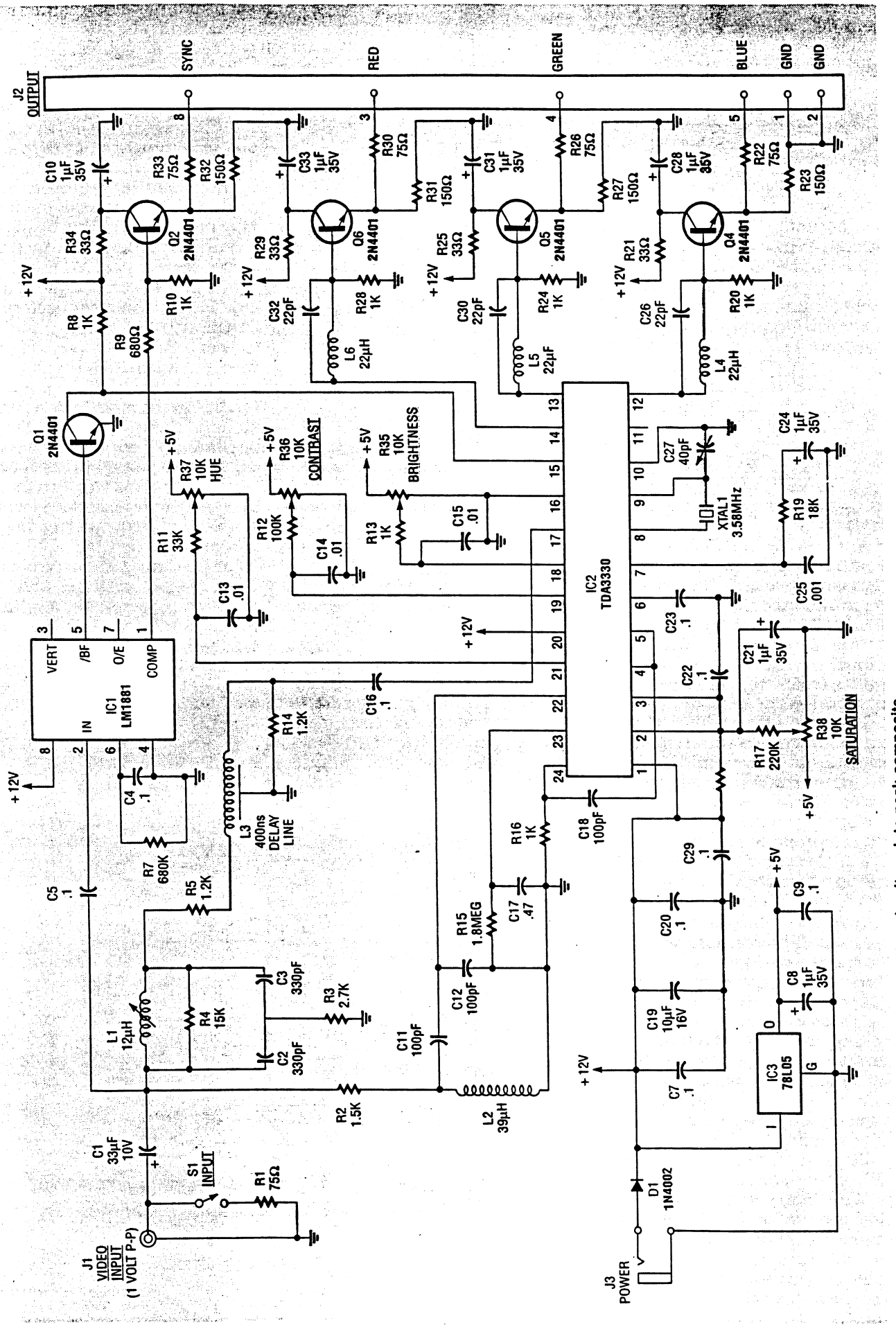

FIG. 2—COMPLETE SCHEMATIC. The circuit accepts a 1-volt peak-to-peak composite input, and delivers RGB and sync outputs, also with a swing of 1 volt peak-to-peak.

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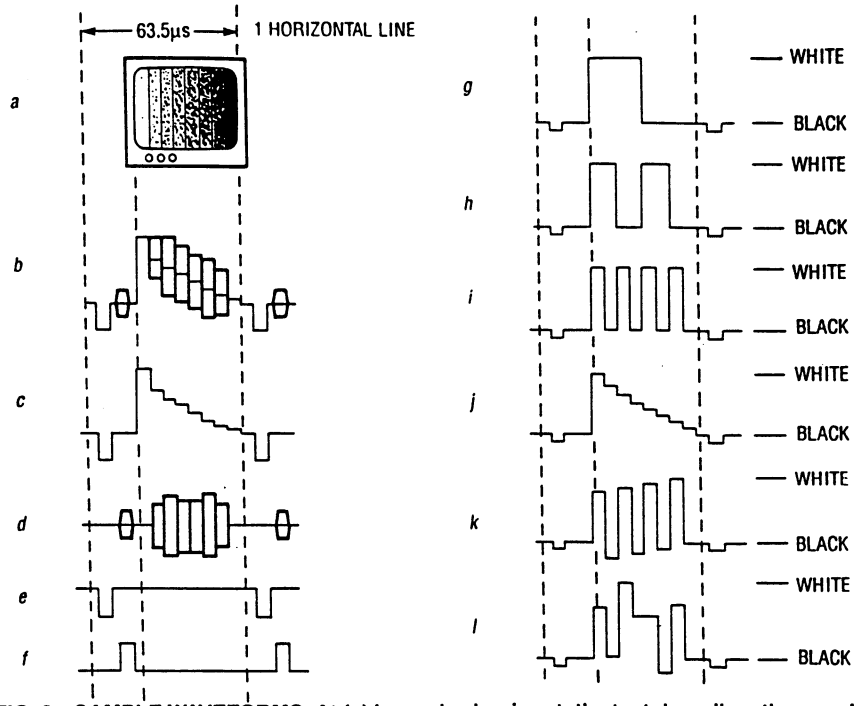

FIG. 3—SAMPLE WAVEFORMS. At (*a*) is a color-bar input; the text describes the remaining signals.

color-bar input. (*b*) Composite video across one scan line. (*c*) The luminance input (pin 17) of IC2. (*d*) The chroma input (pin 22) of IC2. (*e*) The composite sync output. (*f*) The burst-flag input (pin 15) of IC2. (*g*) The green output (Q5). (*h*) The red output (Q6). (*i*) The blue output (Q4). (*j*) All outputs with the saturation control (R38) at minimum. (*k*) The blue output with the saturation control (R38) too high. (*l*) The blue output with the hue control (R37) improperly adjusted.

Building the circuit

With the high frequencies that are involved, stray capacitance and crosstalk will almost certainly cause problems with most breadboarding and wirewrap techniques. Therefore, we recommend that you use a PC board for the project. Patterns for the board are provided if you wish to make your own; boards are also available commercially, as discussed in the parts list. If you use our board, Fig. 4 shows the parts layout.

All parts except possibly IC2 (the TDA3330) are readily available from the mail-order houses advertising in **Radio-Electronics.** If you purchase a partial kit, be careful in selecting capacitors. Only tantalum or monolithic DIP types are suitable, as electrolytic, Mylar, or ceramic disc types may not fit in the allotted space on the printed circuit board. Also note that resistors and inductors are mounted vertically. Bend one of the leads back parallel to the body of the part and mount the body of the part in the hole with the circle around it, and then pass the bent lead through the other hole. Mount the inductors (except L3) in the same manner. This method saves space and also furnishes you with good debug/test points.

We also strongly recommend the use of IC sockets. If you are unable to locate a 24-pin socket for IC2, you can use 16- and 8-pin sockets mounted end-to-end. The pads around the trimmer potentiometers have been laid out so that several types of trimmers may be installed. Just be sure to mount the trimmer's wiper arm in the correct pad.

The board was designed to accept PC-mounted connectors for J1 (input), J2 (output), and J3 (power). However, you may not want or need these types. Our prototype uses a BNC connector for J1, but a simple RCA jack may suffice. Likewise, J2 and J3 may be eliminated entirely or changed depending on what your particular application involves. Switch S1 may be replaced with a simple jumper/header combination for most setups.

For best operation, the board should be installed in a shielded enclosure. The template in Fig. 5 shows hole locations for mounting the board in the project box that is mentioned in the parts list. The board is held in place in the box by the connector hardware (J1–J3).

Hooking it up

Regardless of the type of con-

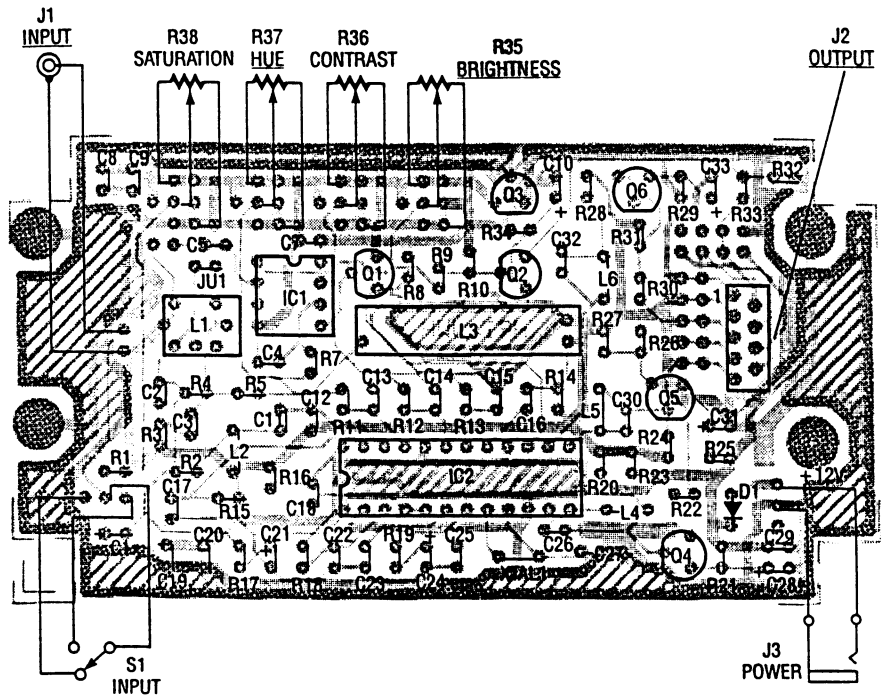

FIG. 4—PARTS LAYOUT. All parts, including the variable resistors and the I/O jacks, mount on the board.

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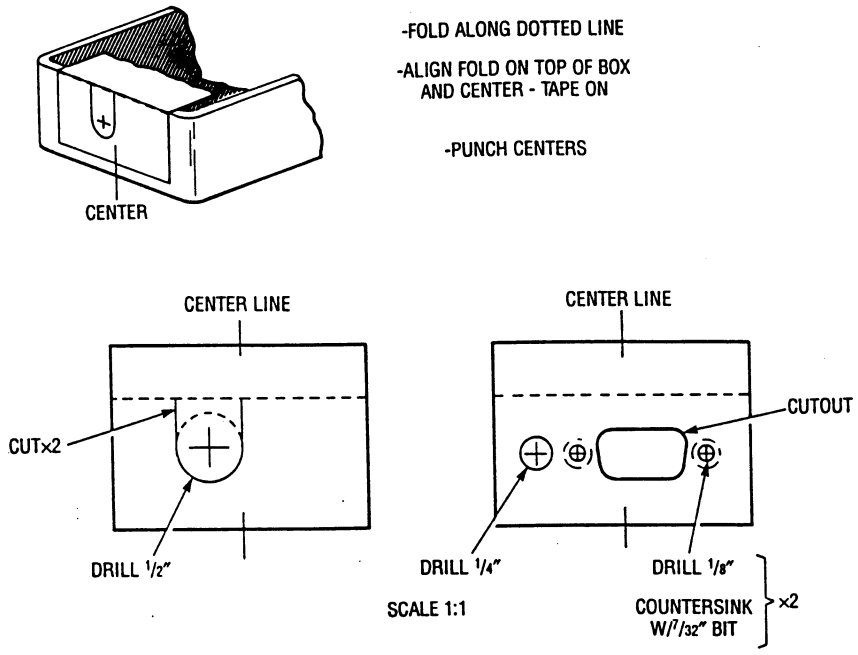


FIG. 5—DRILLING TEMPLATE. If you use our board and the box mentioned in the parts list, drill the box as shown here.

PARTS LIST

All resistors are ¼-watt, 5%, unless otherwise noted.

R1, R22, R26, R30, R33—75 ohms
R2—1500 ohms
R3—2700 ohms
R4—15,000 ohms
R5, R14—1200 ohms
R6—not used
R7—680,000 ohms
R8, R10, R13, R16, R20, R24, R28—1000 ohms
R9—680 ohms
R11, R18—33,000 ohms
R12—100,000 ohms
R15—1.8 megohms
R17—220,000 ohms
R19—18,000 ohms
R21, R25, R29, R34—33 ohms
R23, R27, R31, R32—150 ohms
R35–R38—10,000 ohms, cermet potentiometer, Panasonic #SOGAO1B1

Capacitors
C1—33 µF, 10 volts, tantalum
C2, C3—330 pf, 50 volts, monolithic
C4, C5, C7, C9, C16, C20, C22, C23, C29—0.1 µF, 50 volts, monolithic
C6—not used
C8, C10, C21, C24, C28, C31, C33—1 µF, 35 volts, tantalum
C11, C12, C18—100 pF, 50 volts, monolithic
C13–C15—0.01 µF, 50 volts, monolithic
C17—0.47 µF, 50 volts, monolithic
C19—10 µF, 16 volts, tantalum
C25—0.001 µF, 50 volts, monolithic
C26, C30, C32—22 pf, 50 volts, monolithic
C27—5–30 pF, trimmer

Semiconductors
IC1—LM1881N video sync separator (National)
IC2—TDA3330 NTSC to RGB decoder (Motorola)
IC3—78L05 low-power 5-volt regulator
Q1, Q2, Q4–Q6—2N4401
Q3—not used
D1—1N4002 rectifier diode

Other components
J1—PC-mount BNC connector (AMP #226978-1)
J2—9-pin D connector, female, PC mount
J3—3.5mm mono phone jack
L1—12 µH variable inductor (Toko #A119ANS-T1034)
L2—47 µH fixed inductor(Toko #348LS-470K)
L3—400 ns delay line (Toko #H321LNP-1436P)
L4–L6—22 µH fixed inductor (Toko #348LS-220K)
S1—SPST, PC board right-angle mount
XTAL1—3.579-MHz crystal
Miscellaneous: Metal case—(Hammond #1590B), 12-volt regulated wall transformer, solder, etc..

Note: The following items are available from Harmonic Research, Inc., 193 Villanova Drive, Paramus, NJ 07652 (201) 652-3277: Complete kit including PC board and all parts except wall transformer, $95.95; Partial kit including all parts except box, S1 and J1, $81.50; Etched, drilled, and silk-screened PC board, $20; TDA3330 (IC2), $4.75. All orders add $2.50 for shipping and handling. New Jersey residents add appropriate sales tax.

nectors that you use, the input should be wired using high-quality coaxial cable for best results. Your VCR or camera may have come from the factory with a cable of this type. Otherwise you can buy or build an input cable with RG59U coax and either BNC or RCA connectors.

The output cable depends on your application and use. Refer to your monitor's manual to determine its input wiring requirements. The decoder's output (J3) is a DB-9 connector that conforms to the PC standard. Many multi-frequency monitors adhere to that standard; but it's a good idea to check the manual just to be sure. With a little luck, you should be able to unplug the cable from the display adapter in your PC and plug it directly into the decoder.

If you're not so lucky, you'll have to wire up a cable or an adapter. In addition, we left a row of pads just behind J2 on the PC board; you might find it easier to simply cut the traces between the two rows and add jumpers to reconfigure the pinout of J2. That could save you from having to modify a cable.

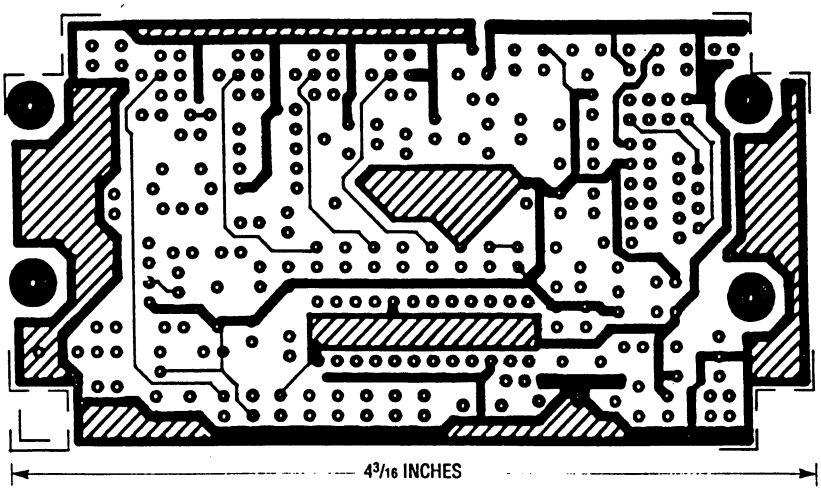
The power supply for the NTSC converter can be any well-regulated 12-volt supply that is capable of furnishing 250 mA of current on a continuous basis. Apply power to J3 through a ⅛" phono plug with positive tip and grounded shield.

Testing and adjustment

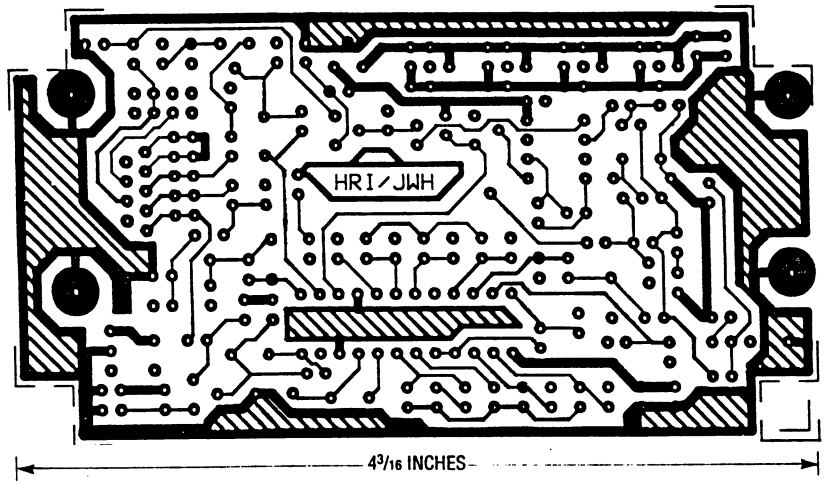
Before applying power, check the PC board for solder splashes, bad or shorted connections, etc.. Do not install the IC's in their sockets yet; rather, first apply power to the circuit and check for smoke and overheated components. Using a DMM, verify that pins 1 and 20 of IC2, and pin 8 of IC1, are all about +12 volts. In addition, verify that the positive side of C8 is +5 volts.

After everything checks out, remove power from the board, install the IC's in their sockets, and make the external connections. A color-bar generator is nice for making the adjustments, but if you don't have access to one, any stable video signal will do. Use a camera or an off-the-air signal; don't try to set up from a tape. Turn the saturation, hue, and

Continued next page ☞



HERE'S THE COMPONENT SIDE OF THE NTSC/RGB CONVERTER



HERE'S THE SOLDER SIDE OF THE NTSC/RGB CONVERTER.

contrast controls (R36–R38) to maximum, and the brightness control (R35) to minimum.

Adjusting without test equipment. With everything hooked up and the monitor on, plug in the power supply. You should immediately see some kind of picture, although it will probably be black and white and possibly flashing on and off. Adjust C27 with a small screwdriver for the most stable picture and the best color. You may find two spots where performance seems equal; either will do. Next, adjust L1 for the deepest, richest color. Then adjust the saturation, hue, and contrast controls for the most natural look, just as you would on a normal television. You should leave the brightness control set at minimum unless you have a specific reason for wanting the black level set higher than it already is. That's all it takes to adjust the unit, and you will probably be very close to the optimum settings.

Adjustment with color-bar generator and oscilloscope. With S1 closed, verify with the scope that you have a 1-volt peak-to-peak signal similar to that shown in Fig. 3-*a* at the input connector. Next, verify that a burst-flag pulse is present at pin 15 of IC2. That signal should look like the waveform shown in Fig. 3-*f*, and must be at least eight volts in amplitude. Also, verify that you have a chroma signal similar to that shown in Fig. 3-*d* at pin 22 of IC2. If you examine pin 17 with a scope, it will probably resemble something halfway between Fig. 3-*b* and Fig. 3-*c*. Adjust L1 for minimum subcarrier by making the signal look like in Fig. 3-*c* as much as possible.

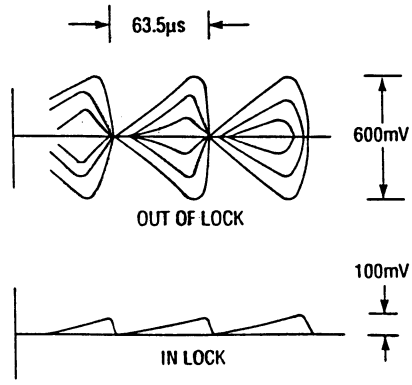


FIG. 6—VCO LOCK AT PIN 7 OF IC2. In (*a*) is an incorrectly adjusted signal; (*b*) shows the correct waveshape.

Continue adjustments by connecting the scope probe to pin 7 of IC2 and referring to Fig. 6. An out-of-lock waveform is shown in Fig. 6-*a*; adjust C1 until you obtain a stable waveform as shown in Fig. 6-*b*. There will probably be two spots in the adjustment range where lock occurs; either is OK. That signal is the VCO lock, and once set, you should be able to see nice, stable signals at the RGB outputs (pins 12–14 of IC2). Refer to the output waveforms in Fig. 3 and watch your monitor while adjusting the saturation, hue, and contrast controls to your liking. Outputs should be set anywhere from 0.7 to 1.0 volt peak-to-peak.

I want my MTV/2!

After making all of the adjustments to the unit itself, leave them alone; instead use the brightness and contrast controls on your monitor to compensate for ambient lighting. The decoder should be able to lock on to anything that comes anywhere close to NTSC video, but it can't deal with some of the copy-protection schemes that many prerecorded tapes use. However, you may be able to compensate by running the composite video signal through a descrambler or stabilizer first.

You may notice that some video looks better on your monitor than on a TV, whereas other video looks worse. The reason is that a high-resolution display cannot improve a low-resolution input, and in some cases the high resolution might even bring out some unwanted artifact that a low-resolution display would cover up.

Some day, with all the hoopla over HDTV and multimedia, video and graphics displays will most likely merge. We will be running our CAD program on the same screen that we sit back and watch STAR WARS 15 on. Until then, projects like this will inch us a little closer.

"From a saved backup...."
By: Ron Whittam
GEnie: EXPLORER.4

//// Atari Users in Cyberspace.

In this column I hope to foster communication and support for 8-bit and ST computer owners... presenting a positive and directive approach. This will help to strengthen the users group base and encourage the executive element.

If you have a question you would like me to answer, or a topic you would like to see covered; send me EMail!

What would it be like if you could talk to an Atari Developer in the comfort of your own home. "Impossible," you might say. You might live miles from a dealer, Atari show, or even another Atari owner. This is often the case for many Atari computer owners - not so any longer. The miracle of telecommunication brings most anyone into your home. Do you need something to spark your users group meetings. For less then what it could cost you to attend a show, you could gather enough information to fill your next meeting. While there are a few providers that offer similar service, I am only familar with GEnie's "Real Time Conference" or RTC. For the price of the connect time you could spend two or three hours with Atari developers and retailers in one of these conferences.

In the world of Atari: Computer owners, dealers, and developers are not often near each other. Owners, dealers, and developers are few and far between. However, "few" is a relative term. There are many, many Atari owners using Atari computers. Its just a rare moment to see more then 15 to 20 in one location. But the other day, I had the opportunity to meet a developer face to face. I was in a room with this developer and a host of Atari computer owners located all across America in both the USA and Canada. Most amazingly, they all met in my home....

The room was quiet. I had arrived early. I took a moment to look around. Two others had arrived before me. The room was quite large with one huge round table in the center. It looked like it could seat 200 people with standing room against the wall. The walls were lined with doors. It seemed to me that there was one door for each chair at the table. I stepped forward and took my seat. My name tag had my name on it; but I was given a marker to write in an alternate name to be known by during this session. I changed my name tag to reflect my first name and then greeted the others who were in the room. More had arrived while I was getting adjusted and I told them hello as well. A few more arrived. I took a moment to go to out to the kitchen and get a couple of pieces of pizza to munch on while I listened. I grabbed a Coke as well. I settled back down in my seat and looked around again. Seems that even more had arrived and the special speaker was here, too. The room was no longer quiet.

Continued next page -->

The virtual reality of cyberspace brought this conference room into my home, and me into the home of each person at the table. This amazing feat of technology was made possible by General Electric's Information Service; called GEnie. Connecting my Atari ST to the phone system at 2400 baud and using the "ST Aladdin" communication program for GEnie I was able to interface with a large number of other Atari ST users.

This real time conference, or RTC for short, was called to order by Lou, the moderator. He introduced the guest speaker and set up the agenda. First the guest speaker would have an opportunity to talk about his new product, then each person at the table would be given an opportunity to ask him questions during the Q&A session. After that, Lou would have some prizes to give away. Sounded great.

The guest speaker was an active developer on the Atari computer platform. Ralf Doewich of Cybercube Research Limited. One of his claims to fame is the CaTTamaram board that was developed for the Atari Graphics Workstation, the Atari TT030. They have made some improvements, enhancing the product and making it more compact. The most impressive of its improvements was the increase in CPU speed, 48MHz. Running a MC68030 at 48MHz is screaming fast. The speaker provided users with some handouts, here is copy of the spec sheet:

<CYBERCUBE> Here is a short list of the CyReL CaTTamaran features:

- Works with all TT motherboard revisions. Simple solderless plug-and-play installation for the newer boards.

- Our highly acclaimed RUN-ME-FIRST Interactive Installation Program features a graphical installation tutorial guiding the user through all the installation steps.

- Increases the performance of your TT030 up to 150%!

- Easy-to-use CyReL Dashboard Utility to control the CaTTamaran speed switching functions. Switch anywhere, anytime!

- Excellent compatibility with all existing software programs.

- Another reliable quality product from Cybercube.

- Best value for your money: revitalize your system for a little over $2 per MHz! A great deal for just US $99!

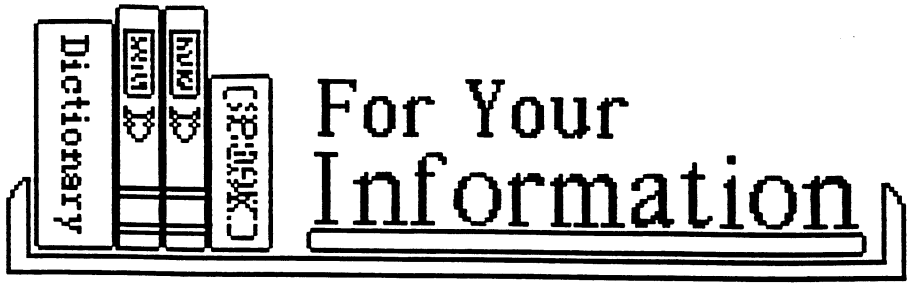
<ST.LOU> Whew! Congratulations! Can you give us some test results?

<[Ralf] CYBERCUBE> Hmmm... I think I got some here... Here are some benchmarks to show the kind of performance figures you can expect when using the CaTTamaran in _COMBINATION_ with any TT-FastRAM board, a ROM relocator and a replacement VDI driver like WARP9 or NVDI:

```
Integer TT030 ########## 100%
TT030 + CaTT  ############### 150%

Float TT030   ########## 100%
TT030 + CaTT  ################# 160%

ROM TT030     ########## 100%
TT030 + CaTT  ################### 170%

RAM TT030     ########## 100%
TT030 + CaTT  ######################## 220%

Averages:

Graphics: TT030 ##### 100%
TT030 + CaTT    ################################### 681%

CPU: TT030      ##### 100%
TT030 + CaTT    ######### 172%

Overall: TT030  ##### 100%
TT030 + CaTT    ############################ 545%
```

As the meeting came to a close, people said their goodbyes and retreated back through the doors from where they came. A few hanger-ons sat around chatting about this or that. I could easily hear their quiet conversations. Finally, I decided to leave as well. I said my goodbye and was told "so long" by those who were left. I paused for a moment before closing the door. I realized that I had chatted with some of the best people on earth in the comfort of my own home. It was a satisfying thought. I shut the door. And my life would go on; somehow more enriched then before.

Ron Whittam is a Customer Support Specialist for a small software firm in Boise, Idaho; and the President of the Atari Boise Users Group. He can be contacted on GEnie (EXPLORER.4), on the Internet at <r.whittam@genie.geis.com>, or on ApC BBS (208-362-1790).



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//// Atari News
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//// Atari & Williams Join Forces

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	Atari	Edelman	Williams Entertainment
	408/745-8852	415/433-5381	903/874-2683

For Immediate Release

ATARI AND WILLIAMS ENTERTAINMENT TO CREATE 64-BIT VERSIONS OF POPULAR ARCADE GAMES

Innovative Deal Brings Hot Games To Both Jaguar Fans and PC Game Players

SUNNYVALE, CA (September 26, 1994) -- Atari and Williams Entertainment have agreed to work together to bring vastly enhanced versions of Williams' popular, classic arcade games to the Atari 64-bit Jaguar system and high performance PCs.

According to the licensing agreement, Atari will exploit the Jaguar system's 64-bit power to create new versions of such Williams' hits as Joust, Defender, and Robotron. These new games will offer features such as first-person perspectives in a realistic, three-dimensional environment. Atari then will market these games for its Jaguar system, while Williams will license the new versions to market them for high performance PCs. "64-bit power will make our best games even better by creating a compelling, immersive, experience for players," said Byron Cook, president of Williams Entertainment. "We are very excited about the Atari Jaguar 64-bit platform and are happy to support it with our finest titles."

This is not the first cooperative venture between Williams and Atari. Williams and Atari have been promoting the Jaguar 64-bit system with Williams' Troy Aikman NFL Football through radio promotions in 25 top markets nationwide. Williams will make the game available in November on the Jaguar. Williams also is publishing a Jaguar version of its popular game Double Dragon Five, which also will be available in November.

Continued next page -->

Williams Entertainment Inc. is the new home video subsidiary of WMS Industries, the company that created Mortal Kombat and NBA Jam video games.

Since its release in November 93 Atari's Jaguar game system has been named the industry's Best New Game System (Video Games Magazine), Best New Hardware Systems (Game Informer) and 1993 Technical Achievement of the Year (Die Hard Game Fan). Jaguar, the world's first 64-bit video game system, retails for $249.00 and is the only video game system manufactured in the United States.

Atari Corporation, based in Sunnyvale Calif., designs and markets 64-bit interactive multimedia entertainment systems and video games.

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//// Sega Follows Nintendo's Lead

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Brenda Lynch
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SEGA AND ATARI ANNOUNCE LONG-TERM LICENSING AGREEMENTS, EQUITY INVESTMENT, AND RESOLUTION OF DISPUTES

SUNNYVALE, Calif. (September 28, 1994) -- Sega Enterprises, Ltd., and Atari Corporation (AMEX:ATC) announced today an affiliation that includes several agreements designed to serve as the basis of future working arrangements between the two video game manufacturers.

Under the terms of the agreements:

- Sega will receive worldwide, non-exclusive rights with certain exceptions to Atari's extensive library of patents, a number of which extend beyond the turn of the century. The agreement covers Sega, its subsidiaries, its licensees, and its customers for more than 70 U.S. patents and applications, for a fully prepaid royalty to Atari covering the remaining 7 years of certain patents, amortized at approximately $7 million per year. Atari will therefore receive a total of $50 million, less Atari's contingent attorney fees and costs.

- Sega will purchase approximately 4.7 million shares of Atari common stock for a total price of $40 million.

- Both companies will enter into software license agreements for a specified number of games that would be made available on each company's present and future platforms.

- Atari will dismiss its legal proceedings against Sega, and each company will release all claims against the other.

The agreements are subject to approval by the United States Department of Justice and the Federal Trade Commission under Hart-Scott-Rodino and to certain other conditions.

"We are extremely pleased with this relationship that has potential long-term benefits for both companies," said David Rosen, Co-Chairman of Sega of America.

"We at Atari are very pleased with this new affiliation. The increased cash position will be used among other things to enhance our marketing position this fall," said Sam Tramiel, President, CEO of Atari Corp.

Atari designs and markets interactive multimedia entertainment systems and is located in Sunnyvale, California.

Sega Enterprises, Ltd., Tokyo, is a nearly $4 billion company, recognized as a leader in interactive digital entertainment media with operations on five continents.

//// AvP Announced for Jaguar

ALIEN VS. PREDATOR COMES ALIVE ON 64-BIT ATARI JAGUAR

Video Game Magazine Reviewers Raving about Jaguar's "Best Game to Date"

SUNNYVALE, Calif. (October 3, 1994) -- Move over Mortal Kombat II, on October 21 the most sought-after video game will arrive in stores across the country. The advanced first-person perspective version of Alien Vs. Predator, available only on the award-winning 64-bit Jaguar system by Atari, is already being considered one of the best game titles in video game history by people "in the know" -- the video game reviewers.

"Alien Vs. Predator is the best 3-D action game that I have ever played -- the graphics and game play are second to none," claimed Editor-in-Chief Dave Halverson of Die Hard Game Fan. "If you own a Jaguar, you must own this game, and if you don't own a Jag, well, it's time to get one. More games are on the way!"

Roaring into stores on October 21 at a suggested retail price of $69.99, Alien Vs. Predator for the 64-bit Jaguar blows away prior versions of the game with the most realistic graphics available, amazing digitized sound effects and increased play variety. Alien Vs. Predator is a Twentieth Century Fox licensed property based on the films of the same names. Gamers can choose the Predator, Alien or the Colonial Marine as they battle through different theaters of combat including the Predator Ship, the Marine Training Base and the Alien Ship, enjoying hours of different types of play.

"I was overwhelmed by the cutting-edge graphics and the innovative game play of Alien Vs. Predator -- no question, it's the best Jaguar game to date," said Paul Anderson of Game Informer. "The sheer size of Alien Vs. Predator is amazing -- I've already spent 40-plus hours playing as the Marine and haven't even tried the Alien or Predator assignments. Alien Vs. Predator will keep the attention of even the most seasoned game players."

"The sophisticated technology of the Jaguar platform allows for the best in stop-motion animation, giving each character smooth, realistic movements, and digitized sound effects that provide a dynamic audio environment," said software developer Purple Hampton. "Alien Vs. Predator is the best demonstration to date of what 64-bit technology can provide in terms of sophisticated graphics, sound quality and game play."

Atari's Jaguar game system has approximately 30 software titles planned for release before the holiday season. Popular titles in the works include Dragon - The Bruce Lee Story, Doom, Rayman, Troy Aikman Football, and Kasumi Ninja.

"We believe that Alien Vs. Predator has true mega-hit potential," said Atari Corporation President Sam Tramiel. "This is a great example of Atari developing new games that use the full technological capacity of the 64-bit Jaguar and taking home video games above and beyond where they've been to date."

In support of this landmark game and the Jaguar system, Atari has launched an aggressive, multi-million dollar advertising campaign that includes a specific television ad for Alien Vs. Predator. The advertising schedule includes national cable advertising in addition to programming in 19 of the top spot markets that will deliver more than 300 million targeted media impressions.

Since its release in November 1993, Atari's Jaguar game system has been named the industry's "Best New Game System" (Video Games Magazine), "Best New Hardware System" (Game Informer) and "1993 Technical Achievement of the Year" (DieHard GameFan). The Jaguar is the only video game system manufactured in the United States.

Atari Corporation markets interactive multimedia entertainment systems, including Jaguar, the world's only 64-bit system, and the only video game system manufactured in the United States. Atari is headquartered at 1196 Borregas Avenue, Sunnyvale, California 94089.

# # #

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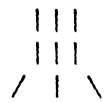
ALIEN(tm) and PREDATOR(tm) are trademarks of Twentieth Century Fox Film Corporation and used under sublicense from Activision.



Hard & Soft's Speed Resolution Enhancer

By: Matija Grabnar

Speed in computers is like money: You can never have too much. As soon as the Falcon came out, there were rumours of speeders for it, with names like Mighty Sonic and Skunk, and lately Overscan has been raising a lot of eyebrows with its advertisements for its Afterburner 040.

Naturally then, when the Slovenian Atari representative offered to install Hard&Soft's Speed Resolution Enhancer in my machine, I was immediately interested.

The package contains two booklets, the first explaining the software configuration (mainly for the screen resolution drivers) and the second explains the installation of the hardware. The package also contains a PCB, a 19 pin monitor adapter, various electronic components to be installed on the motherboard, screws, a switch, a small ventilator, and a floppy with the driver software. Everything you need is in the package, all you need is a set of tools and some solder.

DO NOT attempt installation of this speeder if you are not quite confident of your soldering iron skills. Also, make sure the manual is in a language you understand well (I don't know if Hard&Soft has a non-German version). Even though my Atari representative knew what he was doing (it was not the first speeder he was installing), the installation took several hours. With me watching anxiously over his shoulder, he soldered some wires to the motherboard, bent chip legs, soldered in components and at last put in the speeder PCB.

Because Speed Resolution Enhancer can drive the video chip with as much as 70MHz, it needs extra cooling. To achieve this, the internal hard disk bracket is removed and replaced with one housing a ventilator. The ventilator's leads hook up to the power supply without soldering, and the hard disk gets fixed to the ventilator housing instead of to the bracket.

A hole needs to be made in the housing to accommodate a small switch. This switch is flipped to determine whether the processor's clock is double that of the bus or not. The jumpers on PCB determine the computer's bus speed after being turned on. You can select 16, 18 or 20MHz bus speed.

Continued next page -->

After a while you can tell from the memory test's speed what bus speed is currently selected. I wouldn't have thought the difference between 16 and 20 MHz would be visible in the speed of the dashes, but it is. After getting used to 20MHz booting, booting at a normal bus speed seems to barely creep along.

Why is the top bus speed limited to 20MHz? According to people from BlowUp (who certainly know their way inside the Falcon), while other components have no problems with higher bus speeds, 20MHz is the most that the blitter can handle. Anything more and the machine freezes as soon as the blitter tries to draw the Atari symbol in the upper left corner. Changing the bus speed with the machine running seems infeasible: To change bus speed Hard & Soft supplies a simple accessory, which forces a reset immediately after changing the bus speed, thus ensuring a consistent processor state. Clock doubling seems to be a less dramatic matter: You can usually toggle the clock-doubling switch in the desktop without undue effects, but such a switch causes some programs to throw random bombs and freeze the machine. The bus speed setting survives all resets, including CTRL-ALT-RSHIFT-DEL and reset-button hard reset. The jumper selected speed is set only at power-up. This makes it possible to use backward as usual, with the exception that you first have to switch to 16MHz.

Practically no utility programs seem to mind the higher bus and clock speeds, with one important exception: the timing of transfers between the CPU and the DSP when in 20/40 mode is disrupted enough that the communication no longer works. If you need to use the DSP, you should switch clock doubling off and use the 20/20 mode.

Just for comparison, I tested how long it takes to view a 640 x 497 JPEG using a registered version of GemView 3.03 set to variance-based colourmap, with or without a DSP JPEG decoder at various clock-speeds. The fastest, at 35.0 seconds is 20x20 mode, with a DSP decoder. DSP decoder at normal Falcon speeds clocks in at 45.7 seconds, and just slightly slower is non-DSP mode at 20/40, with 46 seconds. The normal mode without DSP comes in last and takes 1:12.0 seconds. Of course, viewing in monochrome mode would considerably faster, due to smaller bus load and less complicated colour translation.

In general, the largest part of the speed-up is gained by the higher bus speed, and not with clock-doubling, which is not surprising given the lack of external cache on the CPU.

In addition to the speed increase, the board and software implement a resolution enhancer, similar in concept to BlowUp. There are, however, some significant differences.

The configuration program for the resolution enhancer seems seriously concerned with your monitor and requires you to either select a monitor from the list or to enter its data (maximum and minimum horizontal and vertical frequencies). These limits are strictly enforced. The user interface of the configuration program is more fidgety than BlowUp's and I missed BlowUp's handy UNDO. Resolution Enhancer, confident that it can't damage your monitor, is far less willing to reset to the original settings, except when it calculates that you have exceeded the factory limits of your monitor. However, the state the configuration program returns to and the one displayed on the sliders are not always the same. For best results, make sure the screen driver is NOT running when you are configuring new resolutions.

Continued next page -->

While the resolution driver lacks some of BlowUp's more advanced features, like having 78Hz update in compatibility (ST) modes or like sliding the sync frequency slowly, to draw the most out of marginal monitors, it makes good use of the speed enhancement. Some of the most dramatic resolutions come only when the bus speed is 20MHz, because in those resolutions the problem is bus bandwidth and not monitor capability. While I was unimpressed with the increased resolutions in the monochrome area (where the limitation seems to be the quality of the monitor), I was impressed with being able to coax out a 640x480 resolution in TC! In this resolution the screen takes up 600KB, however, so I guess I will have to look into some memory expansions.

I was very concerned about the heating problems which might come from the increased operating frequencies. However, I was pleasantly surprised when I found that despite this summer's high temperatures (32-35C), the machine did not get too hot even after several hours working at 20/40 MHz, with the machine in its original case, not in a tower.

The price of the speed up in Germany (and In Slovenia) is 400 DEM for the kit and 100 DEM for the installation.

For the lovers of numbers, here are some more. To lha compress 29 files containing 4877077 bytes, it took me 10:55 at 16/16 and 7:15 at 20/40 - a 166% speed increase.

Last but not least, here is the GemBench result for my favourite working resolution:

```
GEM Bench v3.40                Ofir Gal 14.1.94
=============================================
Falcon 030 TOS 4.04, MiNT not present
Blitter Enabled, NVDI not present
Video Mode = 640 * 480 * 2 Colours
FPU not present
Run and Malloc from STRAM
Ref = F030, 640*480*2
Speed enhancement 20/40
=============================================
GEM Dialog Box:              2.955     131%
VDI Text:                    2.900     132%
VDI Text Effects:            5.935     139%
VDI Small Text:              3.210     132%
VDI Graphics:                5.600     165%
GEM Window:                  1.170     130%
Integer Division:            1.235     250%
Float Math:                  3.830     139%
RAM Access:                  1.385     158%
ROM Access:                  1.490     155%
Blitting:                    0.890     129%
VDI Scroll:                  2.180     130%
Justified Text:              2.750     131%
VDI Enquire:                 1.295     132%
New Dialogs:                 3.475     134%
=============================================
Graphics:                              135%
CPU:                                   175%
Average:                               145%
With NVDI, results are screen: 423%
                        CPU: 98% at 16/16 and screen 599%,
                        CPU:171% for the 20/40 mode.
```